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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,324	09/12/2003	Bodo Ehlers	FHN-106-B	9310
7590 09/08/2005 Christopher A. Mitchell Suite 624 3001 West Big Beaver Road Troy, MI 48084-3107			EXAMINER GOLUB, MARCIA A	
			ART UNIT 2828	PAPER NUMBER

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/661,324	<b>Applicant(s)</b> EHLERS ET AL.	
	<b>Examiner</b> Marcia A. Golub	<b>Art Unit</b> 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12 September 2003</u> <u>4/18/2004</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Fig. 1A, 1B, and 3 do not include a reference character 32 that is defined in the specification.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig. 1A, 1B, and 3 include a character 30 that is not defined in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The abstract is objected to because it contains legal language (restates claim 1) and because it is more than 150 words long. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 4, 7, 11, and 14** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims refer to an "optical member adapted to balance the optical path length", however the specification does not describe what this optical member is and does not provide any examples as to what group the element belongs to.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

**Claims 5 and 12** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims refer to the term "first reflective element" without providing a further specification to describe which reflective member the "first reflective element" belongs to. The independent claims define "first reflective element of

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the first reflective member” and “first reflective element of the second reflective member”. Therefore it is unclear to which element the claims refer.

**Claims 6, 7, 13, 14, 17, 18, 19/12, 20, 21** are rejected since they depend on claims 5 and 12.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-18** are rejected under 35 U.S.C. 102(b) as being anticipated by Du et al. (US Pat. 6,124,973).

Regarding **claims 5 and 12**, the term “first reflective element” is best understood by the examiner to mean “first reflective member” in light of claims 1, 2 and 8, 9 respectively.

Regarding **claims 1-18** Fig 10A of Du discloses “An apparatus for shaping part of the collective output beam of a plurality of semiconductor lasers comprising individual bars of semiconductor lasers [2] stacked one on top of the other to form an array, the plurality of semiconductor lasers being arranged to define a plurality of light-emitting areas [a1, a2] and a plurality of non-light- emitting areas [b], and the array having dimensions in X, Y and Z axes, wherein the Y axis defines a fast axis, the X axis defines a slow axis, and the Z axis defines an axis of propagation for the output beam, the apparatus comprising:

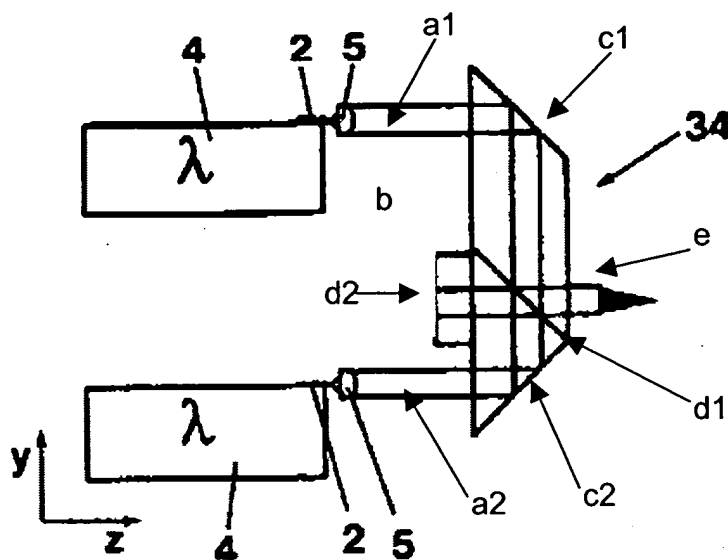


FIG. 10A

a first reflective member [c] comprising at least a first reflective element [c1] positioned a fixed distance from each bar in the array, the at least first reflective element adapted to deflect a first portion [a1] of the output beam from each bar in the array in a first direction [-y direction] oriented at a first angle [0 degrees] in the slow axis direction and at a second angle [90 degrees] in the fast axis direction,

at least a second reflective member [d] comprising at least a first reflective element [d1] positioned a fixed distance from each bar in the array, the at least first reflective element of the second reflective member adapted to deflect the first portion of the output beam from each bar from the first direction [-y direction] to a second direction [z direction] oriented in the Z axis direction;

and whereby the first portion [e] of the output beams of each bar in the array are oriented approximately parallel to the un-deflected remainder [a1] of the output beams

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of each bar, and the non-light-emitting areas are substantially eliminated from the output beams. [two light beams are combined into one light beam]

wherein: the first reflective member [c] further comprises a second reflective element [c2] positioned a fixed distance from each bar in the array, the second reflective element adapted to deflect a second portion [a2] of the output beam from each bar in a third direction [y direction] oriented at a third angle in the slow axis [0 degrees] direction and at a fourth angle [90 degrees] in the fast axis direction;

the at least second reflective member [d] comprising a second reflective element [d2] positioned a fixed distance from each bar in the array, the at least second reflective element [d2] of the second reflective member [d] adapted to deflect the second portion [a2] of the output beam of each bar from the third direction [y direction] to a fourth direction [z direction] in the Z axis direction;

and whereby the first portion and second portion [e] of the output beams of each bar in the array are oriented approximately parallel to the un-deflected remainder [a1,a2] of the output beams of each bar, and the non-light-emitting areas are substantially eliminated from the output beams [two light beams are combined into one light beam];

wherein the third direction [y direction] is approximately opposite the first direction [-y direction], the first and third angles are approximately the same [0 degrees], the second and fourth angles are approximately the same [90 degrees], and the second and fourth directions are approximately the same [z direction];

further comprising at least one optical member [5] adapted to balance the optical path length of the un-deflected remainder [a1, a2] of the output beam of at least one of the bars in the array, the at least one optical member being disposed at a fixed position in the axis of propagation of the un-deflected remainder of the output beam;

wherein the total height of the first and second reflective members corresponds to the pitch of the semiconductor lasers in the array [reflective members c and d encompass all the light produced by laser bars 2];

wherein the output beams [a1, a2] of each bar in the array are propagated in a direction substantially perpendicular to a plane defined by the X and Y axes." [output beams are propagating in the z direction, which is perpendicular to the xy-plane]

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du as applied to claims 1-18 above, and further in view of Dane et al. (US.Pat. 6,385,228)

Regarding claims 19 and 20, Fig 1. of Du discloses an apparatus for shaping the collective output beam of a laser array, but does not describes the shape of the reflective member d. However Fig 3a, 3b, and 4 of Dane discloses a reflective element "comprising a monolithic element [210] having a plurality of individual reflective portions [122] each adapted to reflect a portion of the output beam [200, 212, 214, 216] of a

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discrete one of the bars in the array (not shown, disclosed in column 1 lines 61-63), and a plurality of cut-out portions [120] defined between adjacent reflective portions [122], each cut-out portion adapted to permit transmission therethrough of a portion of the output beam of a discrete one of the bars in the array. (column 4 lines 41-45)

wherein the cut-out portions include opposing inside surfaces, each of which inside surfaces is oriented approximately parallel to the path of travel of the portion of the output beam transmitted therethrough." [Fig 3b shows that the transmitted beam is parallel to cut out surfaces disposed between the reflecting portions]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Dane into the device of Du by making the reflective element to be a periodic grating reflector. The ordinary artisan would have been motivated to modify Du in the manner set forth above for at least the purpose of producing nearly aberration free output beams that exhibit minimum beam divergence.

Regarding claim 21, Fig 1 of Du and Fig 4 of Dane disclose the device as described above, but do not disclose a reflecting element "wherein the opposing inside surfaces of each cut-out portion include an anti-reflective coating." However, anti-reflecting coating is well known and widely used in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the anti-reflecting coating into the device of Du and Dane by providing anti-reflective coating on the surfaces disposed inside the cut out portions 120. The ordinary artisan would have been motivated to modify Du and Dane in the manner set forth above for at least

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the purpose of reducing interference between transmitted light beams, by means of absorbing the light reflected from inside surfaces of the cut-out portions at undesirable angles.


### **Fax/Telephone Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-0218. The examiner can normally be reached on M-F 8-5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**ZANDRA V. SMITH**  
**PRIMARY EXAMINER**